

From: Scott Homsted <scott.homsted@krebsandlansing.com>
Sent: Wednesday, April 13, 2016 2:21 PM
To: Burke, Kevin; Monks, Padraic
Cc: Derick.Read@krebsandlansing.com
Subject: Comments on VSWMM 2016 Update
Attachments: KL Stormwater Manual Comments 4-13-16.pdf

Kevin and Padraic,

Please find attached Krebs & Lansing's comments on the Draft Update of the Vermont State Stormwater Management Manual. We hope you'll give them careful consideration. Thank you for providing the draft and an opportunity to comment.

Scott

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Memo

To: Kevin Burke
Date: April 13, 2016
Re: Stormwater Manual Update Comments

Dear Kevin,

Thank you for providing an opportunity to comment on the March 1, 2016 Draft version of the new Vermont Stormwater Management Manual. Below are our comments, including both general comments on the process of updating the manual, the goals of the manual, and specific standards and treatment practices.

General:

1. We have a general concern about the process through which the draft manual was written and adopted. The new manual started out as a very collaborative process featuring lots of input from the design community and other stakeholders. The process then seemed to be stalled, with no additional meetings to the point where we openly wondered if the manual was still going to be updated. When the draft was issued we were surprised to see an emphasis on a number of items that were only briefly touched on or not discussed at all in the stakeholder meetings. We will touch on some of the specific items in other comments.
2. Throughout the history of the Stormwater Program, staff has been careful to state that the program's goal is NOT to dictate how people develop their sites, but only how they manage stormwater runoff from the site. The new manual gets away from this philosophy and has a new emphasis on certain styles of site development. These emphases are at times in contradiction to other design constraints such as local zoning, and Act 250. We question whether it is appropriate to adopt a manual that has such an emphasis on site design versus the previous emphasis on treatment practices.
3. We would like to see the manual updated to include use of the site balancing procedure to include sites located in impaired watersheds. Based on experience, there are projects where

this flexibility could provide a stormwater treatment system that would treat more runoff than the minimum required by the rules. Ultimately, because projects are so different and each is presented with its own challenges, this flexibility could result in better site designs and a reduction in flows and pollutant loading to the watersheds.

4. Infiltration in urban areas can be very challenging. When considering infiltration requirements it is important that basements be considered. A waiver should be considered for urban sites that are proximate to existing buildings with full basements, especially for redevelopment projects.
5. We would like to see the revised manual allow the removal of existing impervious surface to be accounted for in determining permitting thresholds for redevelopment projects. Currently, larger sites must get a permit for any increase in impervious surface (once the initial 5,000 sq.ft. exemption is achieved) unless the site is 100% redevelopment. We believe exempting projects with no net increase in impervious surface, or at a minimum, projects that achieve a reduction in impervious surface, from stormwater permitting makes sense and will improve water quality.
6. A careful review of the use of the word “shall” in the entire manual should be conducted. Section 1.1 indicates that the word “shall” means the standard or criterion is essential, it is not optional. Yet we note several instances in the manual where a “shall” is followed by exemptions or instances where the “shall” may not apply. Specific instances are noted in our comments, and there may be others. This presents a severe potential for litigation problems down the road.

Specific Comments:

1. Section 2.2.3. We have reviewed Recharge Factors in other states to evaluate the validity of the increased Recharge Factors in Table 2-4. In our limited review of other states that calculate Groundwater Recharge Volume in a manner similar to Vermont, we are finding that the proposed values are arbitrary and the increase is seemingly unwarranted. We feel any increase in the recharge factor needs to be justified with clear supporting documentation. From a design standpoint the increase will likely be a non-factor in “A” soils as most sites will be 100% infiltration sites to meet the other requirements, however in “B” and “C” soils the additional recharge requirements will be quite burdensome. In addition, the previous manual allowed recharge to be met on a “site wide” basis, rather than a watershed basis, as long it is in the same receiving water. This should continue to be allowed and should be more clearly stated.
2. Section 2.2.5.1. The use of “adjusted” curve numbers that are dependent on the storm event being modeled, make the modeling process considerably more cumbersome. Distinct models

will need to be compiled and calculated for each storm event. This will lead to very large application packages and longer review times.

3. Section 2.2.5.5. The switch to the Watershed Lag Method as the standard time of concentration calculator was surprising to us, as it was never discussed in any of the stakeholder meetings. It may be that this switch makes sense, but it's disappointing to have such a major change enacted without any vetting or discussion. Please consider an exemption for existing large stormwater models for major developments (campuses, airports, etc.) that have been compiling models for years.
4. Section 2.3. There should be flexibility in addressing stormwater runoff from "hotspot" uses on a case by case basis. Not all "hotspots" are created equal. For example, a brand new auto service area that is completely enclosed or covered should not be subject to the same restrictions as your standard junkyard.
5. Section 3.0 Post Construction Soil Depth and Quality. We have several issues with this new standard.
 - a) We believe the standard on a whole goes overboard versus what was discussed in the stakeholder meetings. In those meetings the standard was presented as a much more qualitative standard to ensure that on-site soils were not overly compacted during construction. Ideas such as "fluffing" compacted soils, and setting tighter construction limits to limit compaction were discussed. The manual instead goes to extremely specific standards that are going to add very significant construction costs, while also presenting an enforcement nightmare for engineers and stormwater section employees.
 - b) The depth of topsoil required seems excessive. Many existing sites in Vermont have less than 8 inches of naturally occurring topsoil. We feel there should be a less stringent requirement if it can be shown the existing site has less topsoil?
 - c) The specific requirements for organic matter (5%) and pH are excessive. Who's responsible for measuring the pH of every square foot of topsoil? We already have a client who has a 4% organic matter requirement and get feedback from Contractors saying this is difficult to achieve and adds significant costs.
 - d) The post construction inspection requirements are very excessive and will be counterproductive in that "digging up" the topsoil will be required right when we're trying to get seed to grow. If a testing requirement is necessary, we would like to

propose a testing standard similar to the New York Stormwater Manual that requires pushing a 3/8" bar into the soil using only body weight.

- e) The verification and confirmation process outlined for collecting amendment delivery tickets and performing volume checks is unreasonable. The Construction Stormwater Permit requires staging areas and construction roads to be stabilized through the use of crushed stone. If the native soils are unstable then the contractor needs to install more stone until the site is stable. An Engineer cannot predict how a Site Contractor will plan the use of the site during construction or how much stabilization stone will be needed. These unknowns do not allow for accurate topsoil volume calculations. Without accurate knowledge of the topsoil volume, amendment calculations cannot be completed.
 - f) The above concerns strongly suggest that a "Contractor's Certification" (such as a signed affidavit) for this standard be required versus a designer's certification. It is impossible for designers to be on site during all of the topsoil installation and finish grading of a site. Furthermore, many clients do not want to, or in some cases, simply will not pay construction administration services for an Engineer to observe topsoil installation. This is also extended to the year 1 post construction inspection requirements for the first two precipitation events of a 1 inch or greater rainfall.
6. Section 3.6. The requirement for the site to be inspected following the first two precipitation events of at least 1.0 inch HAS to be more flexible. Engineers and Designers do not have the flexibility to drop whatever they are doing, cancel meetings, miss deadlines etc., so they can run out to their sites because it's the first rainfall of 1 inch or more. Can it be "inspect within 1 week of a 1 inch rainfall"? This comment also applies to many other sections where it is noted that sites shall be inspected following the first two precipitation events of at least 1.0 inch.
7. Section 4.0/2.2.5.1. These sections have to do with meeting the Channel Protection Standard using the Hydrologic Condition Method. At the last Stakeholder meeting, an example was attempted using the Hydrologic Condition Method (HCM) and it was a disaster. The example fell apart under very light scrutiny and it was decided that better examples were needed and we would try again. Unfortunately, no additional meetings were held with new, better examples. We strongly encourage the Agency to vet some new examples through the design community prior to adopting the manual and implementing the HCM. Related to this, is the idea of the "feasibility analysis" for sites that cannot fully meet the CPv standard using the HCM. What will the feasibility analysis entail? Will there be worksheets? Sliding scales? Case by case analysis? Multiple submissions showing different designs and progress? Again, this should be well vetted PRIOR to adopting the new manual.

8. Section 4.1.1. Pre-treatment Swale. We have several questions regarding this practice:
 - a) Can stone or timber “drops” be used to flatten slopes to meet the design requirements? We have done this in the past, but would like to see it specifically in the manual.
 - b) A 2% slope is an excessively flat requirement for pre-treatment. Have there been problems with 3-4% slopes in the field? We have many designs up to 4% and they seem to function fine, especially for pre-treatment.
 - c) The new standards create significant additional calculation/modeling requirements for pre-treatment. Is there any thought of a standard design (min. width, length, slope etc.) that could have “presumed” compliance without necessitating additional computations?
 - d) The required element that pre-treatment swales “shall not intercept groundwater” should be relaxed to “should not intercept groundwater”. A pre-treatment swale that would function perfectly 51 weeks of the year should not be dismissed because of a short spike in water table during April. Also, this creates an undue burden of proof on the designer, essentially requiring test pits wherever any stormwater treatment is proposed.
 - e) 2:1 sideslopes for pre-treatment should be allowed. In some cases, this enables a wider bottom which is much more important to pre-treatment than the sideslopes.
 - f) In general, the multiple restrictions on slope, sideslopes and width seem redundant with the requirement for a 10 minute residence time. Why all the restrictions on geometry if the goal is 10 minute residence time? For example, why can’t a steeper swale that provides the 10 minute residence time be adequate for pre treatment? The new manual already states that the grass swale is only allowed for pre-treatment, which by definition, is only the largest sediment particles. The additional geometry requirements are more justifiable if the swale was actually allowed as a stormwater treatment practice.
9. Section 4.1.2.3. In regards to Filter Strip Design, the requirement for flow to travel over impervious area and “...then drop at least 2 inches onto the clean stone diaphragm” is a terrible idea. A 2 inch drop off pavement is what we would commonly refer to as an “ankle breaker”, and will lead to injuries and potential lawsuits. In addition, this type of lip leads to decaying and broken pavement along the edge that will be an ongoing nuisance and maintenance issue. This requirement should be reduced to no more than 1 inch, or eliminated completely.
10. Section 4.1.4.4. In this and other sections of the manual it is noted that certain practices, such as Deep Sump Catch Basins, will require inspections a minimum of 2 times a year. Having different practices with different inspection requirements presents a bookkeeping nightmare when it

comes to keeping track of inspection requirements. The Agency has only recently cleared up a very confusing system where some permits had annual inspections, some bi-annual, and some bi-annual with only an annual report. Do we really want to go back to this same type of situation? In addition, the units are required to be cleaned annually or whenever the depth of sediment is greater than or equal to half the sump depth. Why require the annual cleaning if inspections note it is not necessary? Maintenance is certainly needed and desired in general, but requiring maintenance for structures that don't need it is counterproductive.

11. Section 4.2.1. Reforestation. It is difficult to see how this would ever be a cost-effective treatment method for anyone considering the size of land required, the types and spacing of trees required, and the minimal credit given. Consideration should be given to either re-writing the Reforestation section to give more credit or just eliminating it altogether.
12. Section 4.2.3 Simple Disconnection. We have several comments/questions regarding this practice:
 - a) Why is the minimum width of the disconnection 12 feet, versus being equal to the width of the impervious? For example, disconnecting 5 foot wide sidewalks into green strips between the sidewalk and road has been an effective tool in the past.
 - b) The sliding scales for disconnection area length based on soil type are excessive if those same areas are required to meet the Post Construction Soil Depth and Quality Standard. Meeting the soil standard essentially turns those areas into "A" or "B" soils during low to moderate storm events. This should be reflected in the disconnection area lengths.
 - c) It is unclear if maintained lawns can be used for simple disconnections. They should be, as this will be very effective in typical residential subdivisions for roof downspouts etc.
 - d) The requirement for a level spreader every 20 feet on slopes 8%-15% is unnecessary and impractical in lawn areas. Our understanding of TR-55 is that a properly graded site with sheet flow does not become channelized as shallow concentrated flow for approximately 100 feet. The 20 feet requirement is therefore unnecessary.
13. Section 4.2.5.1. In the design summary for the Watershed Hydrology Protection Credit, there is a reference to "interception of groundwater table shall be avoided". It is our experience that high elevation road/crane path building is not possible without the occasional interception of groundwater. The manual seems to acknowledge this with the emphasis on rock sandwiches and culverts, yet the reference to "shall" is there several times. "Shall" should be changed to "should" in these (and several other) instances throughout the manual.
14. Section 4.3.1.1. Bioretention. We have several comments regarding separation to groundwater requirements in the Design Summary.

- a) We are pleased to see some minor relaxation of separation to groundwater requirements for smaller contributing drainage areas. However, these should be extended to larger areas as well. To have similar or more stringent restrictions for the separation of stormwater treatment to groundwater as there are for on-site wastewater disposal systems makes no sense.
 - b) We are puzzled by the requirement for a groundwater mounding analysis for practices designed to infiltrate more than the 1 year storm event. As mentioned during the initial meeting to present the Manual, larger storm events are essentially “clean water” with the majority of pollutants being picked up during the “first flush”. So why such a concern for groundwater mounding? Isn’t the whole idea of the manual to promote more infiltration and absorption on site? The response in the meeting was that the aquifer needed time to draw down between storm events, but by definition these storms only occur once a year or once every ten years. How does that make sense? Finally, if a mounding analysis is required, it is ludicrous for it to have to show the full 3 foot separation from the bottom of the practice to the mounded water table. Again for the treatment of **wastewater** the requirement is to show that groundwater only mounds to within **6 inches** of the ground surface.
 - c) It should be allowable to use fill to meet the separation to groundwater table, similar to the way a mound style wastewater system is allowable for wastewater treatment.
 - d) There should be a blanket reduction to separation to high seasonal water table to 1 foot for rooftop runoff that is not co-mingled with other runoff.
15. Section 4.3.2.1. Dry Swales and Wet Swales. The same comments above regarding groundwater separation requirements also apply to this section.
16. Section 4.3.3.1 Infiltration Trenches and Basins. The same comments above regarding groundwater separation requirements also apply to this section.
17. Section 4.3.3.4. What is the logic behind requiring the sediment forebay to have an impermeable liner. Why is “incidental” infiltration a problem? In theory the forebay will clog over time anyway, so why require the additional costs of an impermeable liner?
18. Section 4.3.4.12. Treatment Wetlands and Section 4.3.6.1 Wet Ponds. What is the justification for requiring a 10 acre minimum watershed for wetlands and wet ponds? We have designed and witnessed construction of many wet ponds in smaller watersheds and they function well. The 10 acre minimum watershed size for shallow surface wetlands and Wet Pond is excessive. Very few development sites in Vermont have 10 acre plus watersheds. The elimination of the “central” treatment practice of developments of less than 10 acres is a game changer that

should not be unilaterally implemented without a great deal of discussion and vetting with the design community. Krebs and Lansing had one or usually two representatives attend all of the Stakeholder meetings and a 10 acre threshold for allowing pond designs was not discussed at any point. It is concerning that we would talk for an hour about the possible benefits of stormwater credit for planting a single tree, but completely avoid discussion of such a major change. At the very least, such a drastic change should be phased in over time rather than just unilaterally implemented.

19. Section 4.3.5.1 Wetland Conveyance and 4.3.6.3 Wet Pond Conveyance. Without any input or discussion during the stakeholders meetings a gravel trench has been added as a requirement for stormwater ponds and wetlands. The Agency has described the purpose of this new measure as a means for providing thermal impact mitigation. It is our understanding that part of the Channel Protection Treatment Standard is to provide stormwater release in a manner that already considers the warm water or cold water aquatic habitat. The orifice that is sized to control the Water Quality storm is already required to release the runoff within 24 hours. It is our opinion that the manual already has temperature protection measures in place. The addition of the gravel trench adds unnecessary costs to existing stormwater treatment practices that have been designed and constructed to accommodate future growth. Furthermore, for new construction, the gravel trench appears to have a much higher potential for clogging. Because the inlet control orifice is not visible, inspections may not identify clogging, and if clogging is present, access and maintenance during clogging is much more difficult and costly than the use of a trash rack structure.
20. Section 4.3.6.9 Wet Pond Maintenance. The requirement to remove sediment in the forebay every 5 years, or after 50% of the total forebay capacity has been lost, should be changed to only need based. Why require sediment removal if the forebay is only 10% full after 5 years? The requirement for a vertical marker removes the “guesswork” from the determination.
21. Section 4.3.7.2 Green Roofs. Consideration should be given to at least a partial WQv Credit for green roofs designed in accordance with the manual if the engineered soil has phosphorus levels that meet a certain criteria. There is certainly a level of water quality treatment achieved via filtering through green roof soils and vegetative uptake.
22. Section 5.3 Pocket Ponds. Again, the complete removal of a commonly used practice should have been discussed and vetted with the design community. There was no discussion of Pocket Ponds at any of the Stakeholder meetings. It’s difficult to imagine the design requirements for Pocket Ponds couldn’t have been modified in such a way as to retain them as a useful practice rather than just cutting it from the manual.

Kevin Burke
Stormwater Manual Update Comments
April 15, 2016

Thank you again for the opportunity to participate and comment in the rule making process.

Submitted by,

A handwritten signature in blue ink, appearing to read "Derick Read".

Derick Read

A handwritten signature in blue ink, appearing to read "Scott Homsted".

Scott Homsted

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